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ABSTRACT

In March 1968, it was resolved by 18 persons knowledgeable in education, training, and health-care practices in discussion with staff members of the Division of Medical Sciences, that: (1) situations peculiar to the military should be studied, (2) the possibility of simulating such situations in nonmilitary settings should be explored, and (3) education programs and opportunities available to the military man should be examined. In April an ad hoc Committee on Allied Health Personnel consisting of nine persons was appointed, including armed forces liaison representatives. The committee, with staff members of the Division of Medical Sciences, studied military programs and had discussions and correspondence with education-oriented groups and governmental officials. Recommendations deal with reexamining services rendered by health care personnel in civilian life, (2) utilizing of consultants from the armed forces in civilian medicine, (3) experimenting with new categories of supporting health personnel, (4) structuring of career patterns with credit for prior experience and education, (5) focusing of attention upon the civilian use of ex-corpsmen, and (6) appointing state committees to facilitate the use of new categories of personnel. (JK)

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ALLIED HEALTH PERSONNEL

NATIONAL ACADEMY OF SCIENCES

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ALLIED HEALTH PERSONNEL

A REPORT ON THEIR USE IN THE MILITARY SERVICES AS A MODEL FOR USE IN NONMILITARY HEALTH-CARE PROGRAMS

Ad Hoc Committee on Allied Health Personnel
Division of Medical Sciences
National Research Council
National Academy of Sciences
National Academy of Engineering

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PREFACE

It has been a privilege for our ad hoc Committee on Allied Health Personnel, appointed by the Chairman of the Division of Medical Sciences, National Research Council, to conduct a study of the education, training, and assignment practices pertaining to allied health personnel of the military medical departments.

We appreciate the interest and cooperation of the Deputy Assistant Secretary (Health and Medical) of the Department of Defense, and the Surgeons General of the U.S. Army, U.S. Air Force, and U.S. Navy. The conduct of the study was greatly facilitated by the assistance furnished by the liaison representative that each Surgeon General appointed to the Committee. The assistance of the staffs of the military bases that were visited is appreciated, as is the excellent work done by the staff of the Division of Medical Sciences.

The Committee believes that the educational and training techniques used for military corpsmen (medics), as well as the ways in which their skills are used, are worthy of consideration for the allied health professions in civilian life.

The health needs of the nation are immense; however, supplying enough personnel to provide optimal health care is still a problem. If this report proves to be of value in pointing the way to a partial solution of the problem, our efforts will have been worth while.

Lamar Soutter

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INTRODUCTION

In the last few years, studies by governmental groups, professional organizations, and individuals have compellingly documented the need for improvement in the nation's systems for the delivery of medical care.[2,9,13,14,20] Such improvement requires a substantial increase in the numbers of educated and trained health-care personnel. Not only are more physicians, dentists, and registered nurses needed, but more personnel are needed in all of the some 125 categories of health occupations[31] that contribute to the over-all quality of care that present medical knowledge and technology make it possible to deliver. The magnitude of this manpower need has been stated to be about 10,000 additional persons per month during the decade 1966-1975, i.e., over 1 million in the decade.[33]

This report relates to systems and manpower problems, inasmuch as the original purpose of the study was to "explore, using the military medical departments as a model, the extent to which it would be feasible to train nonprofessional health manpower to perform tasks associated with direct health services but that may not require full professional training and skills and thus to permit physicians, dentists and nurses to extend the performance of professional services which they alone are capable of providing." Early in the conduct of the study, it became apparent that there were not one but two important areas to review: (1) the military's health-care training experiences and personnel assignment practices, and (2) the extent to which trained military health-care personnel can be developed as a manpower resource on their return to civilian life.

ORGANIZATION AND CONDUCT OF THE STUDY

An agreement was reached in February 1968 between the Commonwealth Fund and the National Research Council to conduct this study. In March 1968, a group of persons knowledgeable in education, training, and health-care practices were assembled, including representatives from the armed forces, for a 1-day informal ex-

change of information and discussion with staff members of the Division of Medical Sciences (see Appendix A). The meeting resulted in three decisions: (1) that situations and conditions peculiar to the military should be studied, (2) that there should be an attempt to determine which of these unique situations or conditions could be simulated in a nonmilitary setting, and (3) that the military formal education and training programs, on-the-job instruction programs, and career ladders and other opportunities available to the military man should be examined.

In April 1968, an ad hoc Committee on Allied Health Personnel was appointed, chaired by Dr. Lamar Soutter, Dean, University of Massachusetts School of Medicine. The other members of the Committee also have had a broad experience in and possess detailed knowledge of health-related education and training programs and administrative medicine. The Surgeons General of the U.S. Air Force, Army, and Navy each appointed liaison representatives from their staffs to the Committee.

During August and September 1968, representatives from the Committee, military liaison officers, and a staff member of the Division visited the National Naval Medical Center, Brooke Army Medical Center, and Sheppard Air Force Base. They held discussions with the staffs of the appropriate schools in regard to selection of students, curricula, and goals. A special point was made to hold informal discussions with the senior enlisted instructors to learn their opinions on what they hoped to achieve with their students and on the capabilities of the students. The instructors were asked what they themselves had found good in the service and what they considered the less desirable features. A number of the enlisted instructors were nearing the time when they would retire from the military and become candidates for civilian employment. The pro's and con's of military training and experience as preparation for entering civilian employment were discussed at some length.

In addition, discussions were held and correspondence exchanged with several education-oriented groups and with governmental officials.

THE ARMED FORCES MEDICAL SERVICES AND THEIR PERSONNEL

The armed forces furnish complete health care to the some 3.5 million service personnel on active duty. They also furnish

health care to retired personnel, dependents of active and retired servicemen, their widows, and others declared eligible by Congressional or other competent authority. In the aggregate, the military medical departments have a major degree of responsibility for the health care of about 10 million persons.

To carry out their responsibilities, the military medical departments need large numbers of personnel trained in health-related fields. To meet the need for competent personnel to support the physicians, dentists, and registered nurses in their commissioned officers corps, they conduct their own in-service education and training courses, including programs of on-the-job instruction.

Mission

The basic mission of the armed forces medical departments is a health commitment to the serviceman on a worldwide basis. It encompasses preventive medicine, patient care under any conditions (including combat), and adequate plans to meet medical emergencies involving the armed forces whenever and wherever they occur.

The armed forces of necessity have an authoritarian line of command. The duties and responsibilities of all sectors of the military establishment are carefully spelled out in Congressional statutes and in regulations issued by the Department of Defense and the Departments of the Army, Navy, and Air Force. In general, one can say that the Surgeons General are responsible for the health-related needs of the military and carry out this executive responsibility through personnel and institutions directly under their control or through personnel advisory to line commanders.

The Delivery of Health Care by the Military

It is the Committee's opinion that, in general, most institutional and out-patient care by the military is as skillful as that furnished in nonmilitary medical institutions and clinics with full-time closed staffs. The Surgeons General insist that the serviceman and any other person to whom the military furnishes medical care receive care of the best quality. To this end, all permanent military hospitals are inspected by the Joint Commission on Accreditation of Hospitals and, as appropriate, by representatives of medical, dental, and other specialty boards. There is active surveillance of all

formal education and training programs, and it is insisted that active programs of on-the-job education be maintained at stations with medical departments.

Every commissioned officer in the medical departments who is involved in direct patient care holds a degree, diploma, or certificate from an appropriate educational institution. The military may assign corpsmen who have adequate training to perform some direct patient-care and technical procedures that in a nonmilitary environment are usually performed by a physician, dentist, or registered nurse. In some situations (in general, peculiar to the military), the corpsman acts as the medical support for a unit, the professional support being geographically removed, as in front-line combat units and on smaller Naval vessels.

The Corpsman (Medic)

The word "corpsman," when used by itself, indicates that a man is an enlisted member of a military medical service. Qualifying words must be used to indicate his status, in regard to both his professional skills and his military experience.

One can generalize and say that the corpsman is a person who entered the armed forces without training or experience in health-related fields; that he volunteered, or was assigned to, and completed the course in a military school for the training of corpsmen in basic health care; and that he probably was then assigned to a military hospital or clinic for duty. During wartime or other periods of emergency, the basic-school graduate is likely to be assigned directly to a field medical school and, on graduation, join a field unit. Corpsmen who remain in the service for any appreciable period almost without exception attend advanced technical or nursing schools, and over the years attain a high degree of skill in one or another of the many technical or nursing specialties.

Through the provisions of the Selective Service System, many medical-department personnel are brought on active duty for a period of service of 2 years. It is widely believed that many of those who voluntarily enlist in the armed forces do so because of the pressures of the provisions of the draft law. Voluntary enlistments are for 4 years. Among the corpsmen, most of the draftees (about 98%) and many of the volunteers (about 80%) leave the services after fulfilling their obligated periods of service.* This rapid turnover

*Information presented verbally by armed forces representatives.

accounts for the magnitude of the basic education and training programs in the military for corpsmen needed to keep sufficient trained men on active duty to meet the military's requirements.

During each of the last 4 years, the armed forces have sent about 32,000 men through their basic schools for corpsmen. This represents giving such training annually to about 13%, 12.5%, and 40% of the Navy, Air Force, and Army corpsmen, respectively. The Army has a far higher replacement problem than the other services, because it is the recipient of most of the 2-year men brought onto active duty through the Selective Service System, and because it also trains a number of men in various reserve categories who are on active duty for a few months for training purposes. In every recent year, over 30,000 corpsmen with various degrees of health-related training and experience have returned to civilian life.

The three armed forces train their corpsmen in some 30 military occupational specialty fields (Appendix B). It is important to emphasize that these corpsmen advance in the military along two paths: one in a technical (military occupational) specialty, and the other in their military responsibilities. The assignment of responsibilities of a health-related nature is based on a man's skill and demonstrated ability in his health-care specialty, whereas responsibilities and advancement in the military structure are based, in addition, on his abilities as a leader of men and as a supervisor.

SOME COMMENTS ON THE NATION'S MEDICAL SERVICE

The system of delivery of health care to the nation, exclusive of that furnished by the military, is not susceptible to a brief description. No effort will be made here to analyze in detail the methods by which health-care services are obtained by the roughly 190 million citizens who are not eligible to look to the military services. The magnitude of these over-all health-care services is illustrated by the fact that, exclusive of inpatient hospital visits, the average person sees a physician 3.2-4.9 times each year.[14]

Federal, state, county, and city governments are involved to various degrees in the direct delivery of health care to segments of the population. By far, the largest of the services offered is that of the Veterans' Administration to the some 26 million veterans. These publicly organized and financed programs constitute a considerable supplement to the much larger health-care program of the private sector of the nation furnished via individual practicing

professional personnel, group practices, and inpatient and outpatient services available at nongovernmental hospitals and clinics.

The financial support for such health care is also very complex. Financial compensation of the deliverer of health care may be direct from the patient's resources; direct through the patient but from another resource, such as insurance policies; and through third-party payments, such as workmen's compensation, Medicare, and Medicaid. An important consideration in the adequate delivery of health care is the high cost of educating personnel, providing new facilities, and modernizing and maintaining existing facilities.

In our society, a person is free to pursue a career in the health field of his choice at a locale of his choice. This adds another dimension to the problem of delivery of health care to the civilian population: the geographic distribution of health-care facilities and personnel. Therefore, in addition to recruiting adequate numbers of persons into needed health-care specialty fields, a solution must be found to the distribution problem, so that appropriate health-care facilities and persons will be attracted to and retained in rural areas and sections of cities that house the indigent and poor.[14,18] Information drawn from the military experience will not help to solve this problem. The military can, if necessary, by the mechanism of the Selective Service System, obtain the services of a man and, through the use of its military control, assign him to the locale where his services are required. Also, the military constructs and maintains medical facilities at the sites where long-range plans indicate that such services will be needed.

In considering changes that might be advantageous to the delivery of health care to the civilian population of this country, including the development of additional types of supporting personnel, a number of legal and professional problems must be faced, particularly (1) constraints imposed by federal and state laws, and (2) rules and standards adopted by national health-related organizations of educational, professional, and technical personnel, and by institutions that furnish health care. Collectively, those considerations, in effect, regulate what health services may be performed legally and ethically by an individual or an institution.

Laws have been passed and organizations have been formed primarily to safeguard the interest of the patient. It may seem that with time many practices have become unduly restrictive. However, before changes are made, there must be assurance that adequate safeguards for the patient will remain.

The nation's most extensive medical-care program under centralized control is that of the Veterans' Administration. The Vet-

erans' Administration has had abundant experience in its hospitals with education and training programs, and maintains affiliation arrangements with educational institutions for training in numerous health-related classifications. The Committee, in discussing organizations that are prime candidates to conduct pilot programs for newer types of personnel and to try out changes in the education and training of present types, considers that the Veterans' Administration is extremely well qualified to take an important part.

DISCUSSION

To enable them to carry out their over-all mission, the armed forces operate about 230 hospitals with approximately 49,000 beds (exclusive of southeast Asia) and 450 dispensaries, and maintain special medical facilities, such as those aboard ships and in the field. The military personnel in the armed forces medical services number about 158,000: 15,400 physicians, 6600 dentists, 12,000 registered nurses, 11,600 allied health specialists and administrative officers, and 112,000 enlisted men (the great majority of whom are corpsmen). A number of civilian physicians, nurses, and other health-related personnel are employed to augment the military personnel.

In the over-all health-care system of the nation, including the military, there are about 7160 hospitals with more than 1,679,000 beds to which about 29,151,000 patients are admitted each year. There are about 305,000 physicians, 99,000 dentists, and 659,000 registered nurses.[17,29] In 1966, employment in the health-care industry reached about 3,700,000 and an additional 400,000 workers were employed in health occupations outside the health-service industry.[32]

Comparison of the health-care resources of the military with those of the nation as a whole indicates that the military has about 5% of the nation's population as potential customers and about 5% of the nation's health-care resources.

In the military medical departments, physicians, dentists, and registered nurses account for about 21% of the military personnel on active duty. In 1967, in the nation as a whole, physicians, dentists, and registered nurses accounted for 31% of those active in allied health occupations.[29] These percentages indicate that, on an over-all basis, the military medical departments have a greater proportion of allied health personnel than the nation as a whole, in relation to the numbers of physicians, dentists, and registered nurses.

The Corpsman in the Military Environment

The armed services medical departments have demonstrated that, by the use of relatively short, intensive, and carefully structured educational and training programs, they can graduate a corpsman with sufficient basic knowledge and skills to be placed, under supervision, in situations involving the direct delivery of patient care. With continuing, supervised, on-the-job instruction programs, they can produce in a few more months a corpsman with adequate skills to perform many basic nursing and other procedures. The same man over a span of years, with intermittent attendance at special service schools, develops skills and abilities commensurate with his civilian counterpart performing similar types of tasks.

Thus, the military has been able to develop a cadre of persons that, in the military environment, successfully perform under supervision such tasks as "specially defined physical examinations, the treatment of minor illnesses and injuries, application of casts and traction following fractures, collection of blood for transfusion and/or analysis, intravenous treatment with blood and blood derivatives, the administration and supervision of drug treatments, and immunizing procedures. Most important of all in terms of adapting the medical program of the Armed Forces to civilian medical care is the participation of the medical corpsmen in the care of civilian dependents of the Armed Forces."[21]

The Corpsman When He Leaves the Military Environment

The corpsman may, but often does not, complete the basic educational or technical-school requirements to be registered by a nationally recognized nursing or technical association. Corpsmen are in five general categories in regard to employment in civilian health-care programs when they return to civilian life:

(1) those with sufficient educational background, technical training, and experience to meet civilian registration and licensing standards (these men can, if they desire, transfer to appropriate civilian positions);

(2) those with experience and training similar to those required in civilian jobs, but with insufficient theoretical education or formal training to qualify for the accreditation necessary for comparable civilian employment;

(3) those with prolonged military medical experience qualifying them to do much of what a nurse or a physician's assistant does, but unable to turn to similar employment in civilian life because comparable positions do not exist or, if they exist, because a degree in nursing or some other specialty is required;

(4) those who lack a basic educational background and have had only lower levels of training and experience, so that they meet the requirements only for civilian jobs that carry minimal responsibilities; and

(5) those who interrupted their education to fulfill military obligations and who return to civilian life to complete their original educational programs, and the many men who have no interest in remaining in the health-care field and, even if qualified, will still seek other employment.

The mission of the military is to train its personnel for its own needs, so that it can satisfactorily carry out its assigned responsibilities. When it is feasible, the military medical departments conduct their educational and training programs in a manner that meets civilian licensing or accreditation requirements; it generally is not possible to do so. In addition, the military encourage their corpsmen to enroll in on-the-station educational programs, programs of nearby educational institutions, or correspondence courses. In this manner, a man, if he is fortunately located, may obtain the academic credits required to be recognized in civilian life in a technical or nursing specialty.

During interviews with enlisted instructors, at the time of the site visits, Committee members were told by most of the men that they were interested in continuing in the health-care field. The principal reasons given for seeking civilian employment in other than health-care fields were ineligibility for recognition in their specialty and the low wage scales and lack of responsibilities associated with the jobs for which they could qualify. There appear to be very few career patterns in civilian life comparable with the one in the military, where a person can obtain recognition for his technical knowledge and skill and, by advancement in rating, obtain a highly respected military stature. This factor may play a part in a man's decision not to remain in the health-care field in civilian life.

Recruiting the Ex-corpsman into the Health-Related Employment Pool

No one knows how many of the approximately 30,000 corpsmen who return to civilian life each year remain in the health-care field. If only 20,000 of these ex-corpsmen could be so recruited, they would amount to 20% of the 100,000 additional recruits needed each year by the civilian economy, and they would already have some health-related knowledge and experience. There are at least three mechanisms for such recruiting:

(1) the offer of educational and training opportunities leading to accreditation, including financial support, to those who do not already meet civilian requirements (this might be based on a part-time day in a work status and part time as a student);

(2) pilot or continuing programs in which the ex-serviceman candidate can demonstrate, through qualifying examinations or other appropriate means, his skill and ability to perform in an acceptable manner relative to the requirements of the appropriate accreditation body (such programs, if carefully thought out and skillfully administered, ought to be received with enthusiasm by the present national accreditation organizations and by licensing bodies); and

(3) review of the present legal and other fixed standards and modification thereof to accommodate otherwise qualified persons.

Project Transition of the Department of Defense and Project REMED of the Department of Health, Education, and Welfare both seek to assist the ex-serviceman in entering civilian employment; Project REMED is related only to the health-care field. They have prepared a guide to convertibility of military and civilian health occupations to assist ex-corpsmen. Both are valuable, but neither is so organized (and perhaps cannot be organized) as to implement any of the three mechanisms just listed. The responsibility must be assumed by nonmilitary organizations, most of which are nongovernmental.

General

In developing health-care teams for the future, full consideration must be given to prospective requirements for skills in fields and of types not now commonly developed, such as supervisors and repairmen for advanced electronic equipment in laboratories, a

variety of physician assistants, and well-trained emergency-room and ambulance attendants. Very important, also, is the development of true career patterns and pathways, whereby an ambitious and bright young person can progress from one level to another without having to start at the bottom and retrace his educational steps each time he advances in responsibility.

The military has developed a dual career pattern, whereby a man simultaneously increases his technical skills and his military responsibility. In nonmilitary health-care circles, legal statutes and precedents limit flexibility in personnel assignments. It would appear to be practical for the nonmilitary health-care community to modify its policies to increase flexibility.

CONCLUSIONS

1. A belief that the military makes more effective use of supporting health personnel than does civilian medicine in the delivery of medical care is probably well founded.

2. The following characteristics of the military medical system—an authoritarian, centrally-managed system—are pertinent: (1) it can assign, from enlisted personnel, those to be trained in selected skills; (2) it can develop its own training programs and standards of skills to suit its own needs; (3) it can assign the personnel it trains for service when and where it needs them; and (4) it can provide incentives and rewards in terms of advancement in rate on the basis of the quality of leadership shown by the enlisted man, and not merely on the range of service he has been trained and assigned to give.

3. Civilian medical care cannot be described as "a system," but is rather a series of interlacing systems independently managed and unified only by the fact that its practices are molded by the customs and traditions of the profession of medicine. It is basically a free-enterprise system, and it must recruit supporting health personnel, in competition with other industries. It does not have the power to assign trained recruits to areas or skills in which they may be most needed. The training, certification, and licensing of supporting personnel are determined by a confusing array of professional, craft, and governmental regulations and restrictions that tend to make dead-end streets of many areas of supporting medical service and limit the opportunity for advancement in skills, leadership, and economic rewards. This reduces the attractiveness of these types of service to alert and ambitious young people.

4. The military has benefited for years from the use of civilian consultants to assist in the development and conduct of its health-related programs. The civilian medical community should likewise benefit by the use of consultants from the armed forces, especially in areas related to the education, training, and use of allied health personnel.

5. In each recent year, at least 30,000 corpsmen with various degrees of health-related training and experience have left the military services. Many thousands of these men carry with them a store of health-related knowledge and skill, much of which will be lost to society unless strong and timely efforts are made to recruit and retain them in appropriate civilian employment.

6. There is a great need in both military and nonmilitary circles for new approaches to the delivery of health care. Important aspects of such an approach are the identification of new types of skills required by modern medicine and adequate action to incorporate newly identified types of personnel—for instance, physician assistants, autopsy assistants, pediatric nurse practitioners, nurse clinical specialists, and medical technicians—into education, training, and health-care programs. As their worth is demonstrated, they should become a recognized part of the health-care support spectrum.

7. A detailed review of military health-care personnel practices will be of value only insofar as it is accompanied by a comparative review of civilian medical personnel practices and by a willingness by both groups to accept changes that will improve their delivery of total health care.

RECOMMENDATIONS

1. The Committee strongly recommends that those in positions of leadership in civilian medicine re-examine the ranges of services rendered by the many categories of health-care personnel, and restructure these services in ways that increase the effectiveness of the delivery of health care by both professional and supporting personnel.

2. The Committee recommends that leaders in civilian medicine counsel with leaders in military medicine to learn from the military experience better ways of training and using supporting personnel in civilian health-care systems—hospitals, clinics, and private practice.

3. The Committee recommends that experiments be conducted in the training of new categories of supporting health personnel and their integration into health-care teams, and in desirable changes in the skills of presently recognized personnel categories to meet changing requirements. The Veterans' Administration is suggested as a logical system in which such experiments might be tried.

4. The Committee recommends that career patterns for supporting health-care personnel be so structured that a person can rise from one classification to another in his present specialty or enter a related field while receiving adequate credit for prior training, experience, and education.

5. The Committee recommends that adequate attention be given to methods of recruiting and retaining ex-corpsmen in the civilian health-care system; to pilot programs for developing adequate methods of evaluating the ex-corpsmen's existing skills, and programs for increasing those skills to meet specific technical and other job requirements; and to seeking the necessary changes in accreditation and licensing regulations and laws that at present often prevent the technically qualified person from meeting employment requirements.

6. The Committee recommends that each state establish a permanent committee, which would report to that official agency of the state best qualified to supervise professional qualifications, such as the agency for administering state health planning functions as provided for by the Comprehensive Health Planning and Public Health Services Amendments of 1966 (Public Law 89-749), or, as appropriate, to the State Board of Medical Examiners or some other group. The committee would have members drawn from professional, legal, educational, and hospital administrative groups, to serve as an advisory body to educational institutions that establish pilot educational and training programs in the health-care field. This body would consider the adequacy of faculty, facilities, and curricula, and would assist in obtaining modifications in statutes, rules, and regulations so as to facilitate the use of new categories of personnel produced by these training programs.

APPENDIX A

Attendees at the Allied Health Personnel Planning Meeting
26 March 1968

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Washington, D.C.

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Washington, D.C.

APPENDIX B

Enlisted Military Occupational Specialty Titles of the Armed Forces Medical Departments

Air Force[7]

Medical Helper
Aeromedical Technician
Medical Service Technician
Operating Room Technician
Radiology Technician
Medical Laboratory Technician
Histopathology Technician
Pharmacy Technician
Medical Administrative Supervisor
Preventive Medicine Technician
Veterinary Technician
Laboratory Animal Technician
Radioisotope Laboratory Technician
Neurology Technician
Physiological Training Supervisor
Ophthalmology Surgical Technician
Otolaryngology Surgical Technician
Urology Surgical Technician
Orthopaedic Clinic Technician
Allergy/Immunology Technician
Physical Therapy Technician
Occupational Therapy Technician
Orthopaedic Appliance Technician
Psychiatric Clinic Technician
Psychiatric Ward Technician
Medical Materiel Supervisor
Cardiopulmonary Laboratory Technician
Protective Equipment Specialist
Dental Specialist
Preventive Dental Specialist
Dental Technician
Dental Laboratory Specialist
  Complete Dental Prosthetics
  Crown and Fixed Partial Denture Prosthetics
  Removable Partial Denture Prosthetics

Army[28]

Medical Equipment Repairman
Orthopedic Specialist
Brace Specialist
Dental Removable Prosthetic Specialist
Dental Fixed Prosthetic Specialist
Optical Laboratory Specialist
Medical Records Specialist
Medical Supply and Parts Specialist
Medical Corpsman
Medical Specialist
Clinical Specialist
Operating Room Specialist
Dental Specialist
Neuropsychiatric Specialist
Clinical Psychology Specialist
Social Work Specialist
Physical Therapy Specialist
Physical Reconditioning Specialist
Occupational Therapy Specialist
Electroencephalograph Specialist
Electrocardiograph-Basal Metabolism Rate Specialist
Radiographic Specialist
Pharmacy Specialist
Food Inspection Specialist
Preventive Medicine Specialist
Veterinary Specialist
Eye, Ear, Nose, and Throat Specialist
Medical Senior Sergeant
Medical Laboratory Specialist
Diet Cook
Hospital Food Service Steward

Navy[8]

Nuclear Submarine Medicine Technician
Submarine Medicine Technician
Medical Field Service Technician
Advanced General Service Technician
Aviation Medicine Technician
Nuclear Medicine Technician
Cardiopulmonary Technician
Aviation Physiology Technician
Clinical Laboratory Assistant
Tissue Culture Technician
Clinical Chemistry Technician

Radioisotopes Technician
Clinical Laboratory Technician
Preventive Medicine Technician
Medical Administrative Technician
X-ray Technician
Electrocardiograph and Basal Metabolism Technician
Electroencephalograph Technician
Optical (General) Technician
Optical (Laboratory) Technician
Photography Technician
Pharmacy Technician
Orthopedic Appliance Technician
Operating Room Technician
Eye, Ear, Nose, and Throat Technician
Neuropsychiatry Technician
Urological Technician
Occupational Therapy Technician
Orthopedic Cast Room Technician
Special Operations Technician
Medical Deep Sea Diving Technician
Physical Therapy Technician
Dermatology Technician
Embalming Technician
Medical Illustrating Technician
Medical Repair Technician
Advanced General Dental Technician
Field Service Dental Technician
Clinical Laboratory Dental Technician
Research Assistant
Administrative Dental Technician
Dental Equipment Repair Technician
Prosthetic Technician
Advanced Prosthetic Technician
Maxillofacial Prosthetic Technician

APPENDIX C

Selected Reports on Education for and Delivery of Health Care

Darley and Somers have written a thoughtful four-part report on medical manpower;[3-6] their final conclusion is as follows:

> The increased use of medical-care teams, adequately supported by technical and vocational auxiliaries, and the hardware and software developments in automation and information processing and communications, that may dominate much of medicine's future, will not displace the need for individualized professional judgments and continuing attention upon the part of well educated health professionals. On the contrary, by freeing the professional's time and energy, these technics and auxiliaries may facilitate the individualization and personalization of health and medical evaluation and management.

J. F. McCreary, of the University of British Columbia, in a talk on the team approach to medical education, stated that one of the reasons why the physician is not meeting the challenge of primary health care is that he is not provided with sufficient assistance. In the hospital, physicians are assisted, but in private practice, most physicians do what is to be done for their patients without assistants.[16]

The Task Force on Prescription Drugs, appointed by the Secretary of the Department of Health, Education, and Welfare, in its Second Interim Report of 20 August 1968 states that appropriately trained pharmacists may become new vital members of the total health team by serving as drug information specialists.[30]

The American Medical Association (AMA) Commission to Coordinate Relationships of Medicine with Allied Health Professions and Services proposed in 1967 that the AMA set up a "new council not limited to, but concerned with, the following: (1) Identification and definition of groups now engaged in activities related to health care; (2) identification and delineation of other areas in which persons who are not physicians may contribute to the total effort in health care; (3) continual assessment of total manpower needs; (4) cooperation with allied health professions in recruiting efforts when indicated."[22] In 1968, the AMA established a Council on Health Manpower and the American Hospital Association established a Council on Manpower and Education.

D. J. Mase, Dean of the College of Health Related Professions of the University of Florida, in a talk before the American Public Health Association in 1966, stated that one should think in terms of mindpower utilization, rather than manpower utilization. Some of his comments were as follows:[15]

> Mindpower implies using the knowledges, skills, and capacity for independent action of our health personnel for those things for which they are uniquely qualified and delegating to others things previously assumed to be their vested interests. Half or more of those in the health occupations have bachelor's, master's, or doctor's degrees. This makes the health occupations lopsided in respect to the duties to be performed, as those with advanced degrees do things which do not require their knowledge, skill, and capacity for independent action. Table 1 offers a possible plan for academic training at four levels.

TABLE 1. A Numerical Representation (0-4+) of Amount of Knowledge, Skill, and Capacity for Independent Action as These Relate to Four Levels of Education for Personnel in the Health Occupations

Level of Education	Knowledge	Skill	Capacity for Independent Action
I - Doctorate	4+	4+	4+
II - Bachelor's and Master's Degrees	4+	4+	2+
III - 2-year College Associate Degree	2+	4+	1+
IV - Vocational or Technical Training	1+	4+	0

H. I. Greenfield, an economist, in a talk on health manpower problems, said:[12]

> We need schools to provide the whole continuum of degrees—doctor of medicine (MD), master of science in medicine (MSM), bachelor of science in medicine (BSM), and associate of arts in medicine (AAM), as well as new types of related health degrees. The new educational spectrum should include senior medical colleges, junior medical colleges, schools of allied health professions, and community colleges. On the secondary level, vocational schools fit into the picture by their preparation of licensed practical nurses and other health workers in which the job requirements are similar. Corresponding to these new medical workers should be new types of medical facilities where they will work—and here is where the division of clinical

facilities fits: neighborhood ambulatory clinics and diagnostic centers (for medical, dental, and mental problems), hospital satellites, and comprehensive medical service centers.

The Pediatric Nurse Practitioner Program at the University of Colorado Medical Center[19,25]

> prepares nurses to assume an expanded role in providing increased health care to children in areas with inadequate health services and in the offices of private pediatricians. The association of a physician and a pediatric nurse-practioner in a true team relationship allows each of them to fulfill his role and use his skills in medicine and nursing wisely and in a manner that is appropriate for his level of preparation. The end result is improved patient care, benefit to society by conservation of scarce manpower resources, increased availability of comprehensive, expert, and accessible services, and the development of the role of each health practitioner to its fullest.

In 1965, Duke University Medical Center initiated a 2-year course, the Duke Plan for Physician's Assistants.[27] The proposal called for a new member of the health team as follows:

> The physician's assistant is seen as a new category within the structure of the health field, designed to provide a career opportunity for men functioning under the direction of doctors and with greater capabilities and growth potential than informally trained technicians. As the title implies, these individuals would be trained to assist the doctor in his clinical or research endeavors in such a way as to facilitate better utilization of available physicians and nurses. Graduates of this program are viewed as individuals capable of performing, responsibly and reliably, certain of the skills currently practiced by doctors, nurses, and technicians. In patient care areas, the physician's assistant will be able to draw blood, start and regulate IV's, intubate the GI tract, and do other procedures classically performed by the doctor. He will be trained to monitor vital signs, give medications and keep progress records, skills classically performed by nurses. He will also be trained to operate certain diagnostic and therapeutic instruments, such as an EKG machine and respirator, as well as perform routine laboratory studies, skills usually performed by technicians. The physician's assistant would receive most of his training within a clincial discipline of defined scope, in order to develop quality of performance and an understanding of illnesses in the field.
>
> The task then is to provide an educational framework designed to attract career-oriented men and supply them with the skills to function effectively as a physician's assistant. Selection of students and curriculum should reflect this goal. It is important, we believe, to differentiate this program and its goals from previously unsuccessful attempts to develop male nurses. This program

> calls for intensive training in areas which complement available talents without attempting to replace available talents. Training and salary potential should be consistent with a career in the health field and should reflect the ability of trained assistants to increase the earning power of their employer by an amount appropriate to their projected salary.

In 1968, Alderson-Broaddus College also initiated a curriculum for physician's assistants,[1] with much the same goals as the Duke program. However, the Alderson-Broaddus program is based on 4 years of training, leading to a bachelor of science degree with a major in medical science.

The Frontier Nursing Service[11] was started in 1925 in Leslie County, Kentucky, primarily to assist mothers-to-be at the time of delivery and to provide health care for the children. Health teaching was thus provided for the whole family. The service has made and continues to make a great contribution to the health of those residing in the mountainous area surrounding Leslie County.

Smith and Mottram have reported favorably on their experience in England with the use of experienced nurses to make the initial house calls on patients and evaluate the need and type of medical assistance required.[26] Sidel has reported on the role and training of the feldsher in the U.S.S.R.[24]

In a reorganization of health-care services, to make optimal use of all health-related personnel, legal problems must be given some consideration.[23] Forgotson, a physician, and Cook, a lawyer, summarize the problems as follows:[10]

> Shortages of all skilled health personnel, both physicians and others, new scientific and technological developments, and new methods of organizing health services have made the question of new uses for allied health personnel the critical issue to be resolved if our supply of health manpower is to be used effectively and productively. Analysis of licensure laws regulating health personnel and administrative and judicial enforcement procedures and attitudes indicate that present legal regulation of health manpower restricts optimal allocation of tasks among members of the medical manpower matrix and operates as a barrier to experiments to train and utilize new categories of health professionals. The many and complex factors involved in expanding the functions of allied personnel warrant a revised legal approach perhaps utilizing broad statutory standards, the expertise of an administrative body, and judicial supervision. Primary consideration must be given to the creation of a regulatory scheme to facilitate experimental programs to train and utilize new categories of health professionals and to translate experimental findings into

patterns of regular medical care. To this end, state legislatures must remove the barriers to experimental programs designed to supply the necessary data and knowledge to introduce new categories of health professionals into the personal health service industry.

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